

## ABSTRACT

Devices are disclosed that incorporate an ionization device for generating ions and electrons having first and second conductive electrodes that are separated by less than the mean-free-path of molecules being ionized. Electrons generated by the ionization device may be used  
5 for applications such as light sources, electron bombardment sensors, thyratrons, vacuum tubes, plasma displays, and microwave switches, and ions generated by the ionization device may be used, *inter alia*, in connection with ion focused milling devices, maskless ion implantation devices, ion beam lithography devices, semiconductor mask modification devices, and semiconductor chip wiring devices. Methods of use and manufacture are also  
10 provided.